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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/809,408

03/26/2004

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Q91048

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23373 7590 04/02/2008
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EXAMINER

LAZORCIK, JASON L

ART UNIT

PAPER NUMBER

1791

MAIL DATE

DELIVERY MODE

04/02/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/809,408	Applicant(s) YONEDA ET AL.	
	Examiner JASON L. LAZORCIK	Art Unit 1791	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 December 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,5 and 11-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,5, and 11-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 13 and 14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term "approach zero" in claims 13 and 14 is a relative term which renders the claim indefinite. The term "approach" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. Specifically it is not immediately evident to the Examiner just how close the spherical aberration must be to zero in order to be construed as "approaching" zero. It follows that the precise metes and bounds for which Applicant seeks patent protection are likewise rendered unclear and indefinite.

Claim Rejections - 35 USC § 102

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 and 2 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Sato (US 5,228,894).

Sato teaches a method for press-forming a molded optical element from a heat softened molding materials in a precision molding apparatus (see Fig 3) having a pair of

pressing molds with respective molding surfaces processed to prescribed shapes. The Sato process may be broken down into three steps with a first step of heating the glass material to working temperature, a second step of deforming and molding the heated material, and a third stage of cooling the molded glass to an appropriate viscosity range for removal from the molding apparatus.

The reference specifically discloses that during this third cooling stage of the press forming operation the molded glass product shrinks due to thermal contraction. Sato continues by teaching that “If the molds can not follow the shrinkage at the that time, discontinuous surfaces are produced on the surfaces of the formed product, adversely influencing...optical properties of the formed product”. Further, the reference discloses that “Accordingly, it is necessary to optimize the functioning pressure and the functioning temperature range of a second pressing means which follows the above described volume shrinkage.”

Specifically regarding this optimization step, Sato teaches that the mold cooling rate may be set in accord with “the required quality of the formed optical element” and other predetermined characteristics of the molding system (Column 10, Lines 51-54). Since the rate of volumetric contraction of the molded glass element is directly correlated to the rate of cooling, the rate of approach between the upper and lower mold surfaces must be controlled to maintain contact with the glass surface and a desired compressive pressure. Specifically Sato teaches that “In order to transfer the shapes of the forming surfaces of the molds to an optical element with the required accuracy when the volume of the glass perform shrinks during the cooling process, it is necessary to

control a second press-forming by the pushing cylinder mechanism (205)." (Column 11, lines 1-4).

Applicants newly added limitation requires in part that the pressing is conducted repeatedly and that the correction of the pressing rate cancels changes in optical properties that arise from multiple or repeated pressing operations. On this matter, it is the Examiners position that the prior art teaches a controlled pressing rate for each optical element produced. The Applicant is understood to concede this point in the reply dated December 21, 2007 (page 6) wherein Applicant asserts that;

"Sato does teach a method for press-forming a glass preform in which pressure of pressing is controlled to form a molded optical element" and "this teaching is ... for a process of a single molded optical element in one shot".

Sato further teaches that the disclosed process provides high-precision "products" with "an excellent yield" while making it "possible to shorten the forming time, and to greatly increase the rate of operation". (Column 12, lines 18-23). It should appear evident from the foregoing that Sato intended for the fabrication of multiple optical elements by repeatedly press forming optical elements according to the disclosed process.

Since Sato teaches controlling the pressing rate in each "one shot" molding operation to control the optical properties and likewise teaches repeatedly forming optical elements according to the disclosed process, then it follows that Sato teaches that the pressing rate is effectively controlled to "cancel changes in optical properties

caused by repeated pressing”. Restated, Sato teaches correcting the pressing rate for each pressing operation in order to provide desired optical properties and therefore the reference necessarily teaches a pressing rate control which would compensate for changes in optical properties arising from repeated pressing operations.

In the event that Applicant argues that Sato does not anticipate measuring and correcting steps of the identified claims, it is the Examiners position that the prior art renders the claimed process obvious under 35 U.S.C. 103(a).

“[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation.”; see *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). A particular parameter must first be recognized as a result-effective variable, i.e., a variable which achieves a recognized result, before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation (See *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980) and *In re Antonie*, 559 F.2d 618, 195 USPQ 6 (CCPA 1977)). In the instant case, optical properties of the optical element are directly correlated with the “functioning pressure” of the mold during the cooling step. The linear pressing speed or “pressing rate” at least one pressing mold must be adapted to maintain a controlled compressive pressure upon the molded glass element during the cooling step. Therefore “pressing rate” is deemed a result-effective variable of the optical properties of the molded article. Since optimization of this result effective variable would be undertaken through routine experimentation, the immediate claim of

“correcting the pressing rate of at least one of the pressing molds based on the optical property thus measured” is obvious over the prior art.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 5 and 11-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sato (US 5,228,894).

With respect to claim 5, Sato teaches that the controlled pressure and temperature ramp undertaken in the cooling phase of the molding process promotes the formation of a precision surface and alleviates adverse optical properties of the formed product. Sato indicates adverse optical properties in general and specifically those anomalies which arise due to “discontinuous surfaces ...produced on the surfaces of

the formed product". It is the Examiners understanding that spherical aberrations specifically relate to the problem where a lens not shaped correctly (e.g. discontinuous surface), so the light from the center is focused at a different location than the light from the edges.

Although Sato may not specifically require a step of correcting the lens with respect to a "spherical aberration" as claimed, it is the Examiners position that such a correction is either implied by the Sato reference or would have presented a merely obvious extension over the prior art teachings for one of ordinary skill in the art at the time of the invention.

Applicants newly submitted claims require that the objective lens produced by the claimed method display a particular numerical aperture value and a third-order spherical aberration value for claims 11 to 12 and 13 to 14, respectively. It is the Examiners understanding that the claimed physical properties of the optical element are dependent upon the particular geometry of the optical element and the precision with which the shape and surface are produced.

Although the prior art is silent regarding the claimed physical property values of for the produced optical elements, it is the Examiners position that these properties alone are not sufficient to patentably distinguish the claimed method from that disclosed in the prior art. Specifically, optical elements having numerical aperture and third order spherical aberrations in the claimed tolerances were known in the art at the time of the invention (see for example Ariyoshi et. al.; Jpn. J. Appl. Phys. V41 (2002) pp. 1842-

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1843). Second, the prior art provides neither explicit nor implicit basis to conclude that the Sato method is incapable of or excluded from yielding an optical element displaying said values.

It follows, absent any compelling evidence to the contrary, that the Sato method either inherently yields an optical element of the claimed tolerances or that a lens of the claimed quality would have represented no more than a routine optimization of the prior art process. Restated, absent evidence showing otherwise, the claimed optical element would have been arrived at through no more than routine experimentation and optimization of the process set forth in the Saito disclosure.

Response to Arguments

Applicant's arguments with respect to claims 1, 2, 5, and 11-14 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JASON L. LAZORCIK whose telephone number is (571)272-2217. The examiner can normally be reached on Monday through Friday 8:30 am to 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on (571) 272-1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Steven P. Griffin/
Supervisory Patent Examiner, Art
Unit 1791

JLL